could result in tardive akathisia-like symptoms. The system would be in oscillation between the states of both dopamine depletion and dopamine excess as it attempted to achieve equilibrium. As equilibrium was slowly achieved over time, possibly by a return to a density of dopaminergic receptors, the effects of the oscillations would lessen and the symptoms would gradually subside.

Given the suggested mechanism to explain the observed effects in this patient, we would expect adverse reactions and withdrawal effects of the long-term use of metoclopramide to occur frequently. The real surprise is the relative infrequency of reporting of such adverse effects. In fact, one study found only 479 reports of extrapyramidal reactions in nearly 16 million prescriptions of metoclopramide, and the overwhelming majority (95.0%) of the reactions were of a dystonic-dyskinetic nature.[6] The investigators, however, did suggest care in the use of the drug with girls and young women because they seemed especially susceptible to adverse reactions. Robinson concluded that reported extrapyramidal reactions were rare and were mostly of the dystonic variety.[11]

Adverse reactions have been documented with the long-term oral use of metoclopramide, however. Hyperprolactinemia and amenorrhea have been reported as being elicited by the long-term (nine months) use of metoclopramide.[12] Grimes and colleagues report parkinsonism, acute dystonic reactions, and tardive dyskinesia in 18 patients who had been treated long term with oral metoclopramide.[13] In seven of the patients, orobuccolingual dyskinetic movements developed when metoclopramide was withdrawn. The authors cautioned against the long-term use of the drug because of the potential development of irreversible tardive dyskinesia.[14,15]

Tardive dyskinesia was reported to develop in 11 elderly Swedish women treated on a long-term basis with metoclopramide.[16] An 84-year-old woman treated for eight months with metoclopramide had parkinsonian effects that disappeared in four to eight weeks after the drug was withdrawn, although tardive dyskinesia appeared on withdrawal and persisted six months later.[17] After eight months of treatment with metoclopramide, an 83-year old woman had tardive dyskinesia develop, which worsened when the drug was withdrawn.[18] Motor restlessness (tardive akathisia) and depression that worsened after the withdrawal of metoclopramide are reported in two patients, and the adverse reactions took 18 to 27 months to resolve completely.[19] One of the patients had a pronounced diurnal pattern, with symptoms worse in the mornings, along with an episodic pattern every few days.

The research conducted with rats that showed an increase in the density of dopamine receptors with a prolonged use of metoclopramide is important.[9] Extending this direction of research to determine the effects on receptor density after varying durations of the administration of metoclopramide, how quickly the receptor density returns to normal after withdrawal of the drug, and what actions could be taken to hasten this recovery would be enlightening.

More care needs to be exercised in the use of metoclopramide, particularly with extended use of the drug. We are concerned that many of the adverse effects are easily confused with psychiatric disease and hence might lead to incorrect diagnoses. The drug's method of action and adverse effects are similar to those of antipsychotic or neuroleptic drugs; we therefore wonder whether metoclopramide could be classified as an antipsychotic or neuroleptic drug to warn physicians of its possible harm to some patients.

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Artificial Urinary Sphincter Erosion in Cardiovascular Surgical Patients

A Cause for Concern

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URINARY INCONTINENCE is a significant clinical problem affecting about 10 million adult Americans.[1] Treatment options have evolved with a greater understanding of the underlying disorder to include behavioral, pharmacologic, and surgical measures. The number of patients having iatrogenic urinary incontinence is increasing with a wider use of endoscopic surgical treatment of the bladder outlet and radical surgical therapy for prostate cancer.[2] For these patients, a prosthetic device simulating sphincter activity has been available for the past 20 years with the use of sphincter pros-

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theses.[3] The Scott artificial urinary sphincter (model AMS 800) represents the state-of-the-art active continence device[4] at this time.

Artificial urinary sphincter placement is suitable for selected patients.[5] The long-term success of the device depends on this careful selection and on limiting the incidence of postimplantation complications,[6] particularly infection and erosion of the occlusive cuff into the urethra.[7] Patients with implanted artificial urinary sphincters need to alert their other physicians to the presence of the device, particularly when transurethral instruments may be used or open abdominal or pelvic procedures contemplated that might jeopardize the sphincter's integrity. Physicians need to assume responsibility for managing the sphincter, whether directly or through urologic consultation, to avert the above-mentioned complications.

Patients

We recently evaluated two patients with artificial sphincter cuff erosions due to urethral catheterization through an activated sphincter following cardiovascular procedures. In both patients, this complication required the removal of the device and reimplantation following six to eight months of healing.

Discussion

The two cases mentioned in this report unfortunately occurred because of an improper understanding of the artificial urinary sphincter. A simple awareness of the artificial sphincter's presence is of paramount importance. The device comprises three components (Figure 1): an inflatable cuff that encircles and occludes the bladder neck or the bulbous urethra, a pressure-regulating reservoir that provides pressures of varying ranges, and a central pump that allows cuff decompression; a control assembly within the pump mechanism regulates fluid transfer within the device. This assembly is implanted in the labia of women and the scrotum of men. The pump is activated by squeezing, thus transferring fluid from the cuff to the balloon, allowing voiding or the passage of a catheter. In two to three minutes, the cuff is automatically refilled by the pressure exerted by the balloon. A deactivation device was introduced with the AMS 800 model that allows a sustained decompression of the cuff.[2] This allows the cuff to remain empty during the immediate postimplantation period and, more important, allows atraumatic urethral instrumentation and catheterization if required.

Complications from the placement of the artificial urinary sphincter include urinary retention, cuff erosion, infection, and recurrent incontinence.[6] Cuff erosions can cause perineal pain, a bloody urethral discharge, hematuria, irritative voiding symptoms, or recurrent urinary incontinence. Cystoscopy and retrograde urethrography are used for diagnostic examinations. Erosions after the placement of an artificial urinary sphincter usually occur within three to four months and generally are caused by poor surgical technique, improper cuff sizing and placement, and the incorrect selection of a pressure reservoir. Before the delayed cuff activation after implantation was available, erosion occurred more frequently.

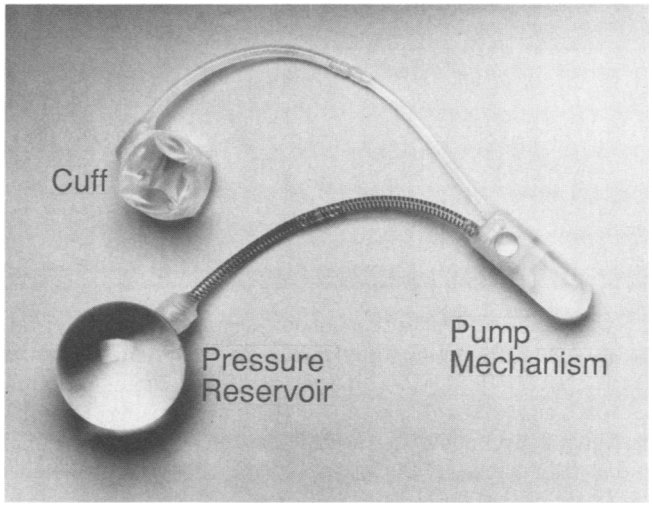

Figure 1.—The function of the AMS Sphincter 800 urinary prosthesis is described in this report (photograph courtesy of American Medical Systems, Inc, Minnetonka, Minnesota).

If a catheter is passed through an occlusive cuff, not only will the urethra be traumatized, but sustained compression of the urethra between the cuff and the catheter will cause ischemic damage, precipitating erosion. Large erosions require removal of the device, repair of the injury, and prolonged suprapubic catheter drainage. Smaller defects can be managed by urethral catheter drainage after removing the device. It is generally agreed that the reimplantation of another artificial urinary sphincter should be postponed for three to six months, with good results reported in selected patients.[7]

Clearly, with the increasing number of these devices implanted in elderly patients, physicians must be alerted to their presence. We counsel our patients carefully about this and also encourage them to wear a Medic Alert bracelet. Other physicians treating these patients must become acquainted with the device's function or consult with a urologist who understands it. These simple measures will prevent serious complications that require prolonged hospital stays and several additional surgical procedures before resolving.

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